

SEP 23 2011

Serial No. 10/593,645

IN THE CLAIMS

1. (currently amended): A method of manufacturing a catalytic converter a catalyst whose outer peripheral surface is wrapped with a mat, and an outer cylindrical housing which includes at least a reduced-diameter portion to support therein the catalyst and the mat, the method comprising the steps of:

providing a pressing device, and thereby press-fitting the catalyst and the mat into the outer cylindrical housing along a longitudinal direction of the outer cylindrical housing;

a detecting step of detecting a longitudinal pressing force at a time when at least a portion of the catalyst is within an enlarged-diameter portion of the outer cylindrical housing while the pressing device presses is pressing the catalyst and the mat in the longitudinal direction into the outer cylindrical housing;

a determining step of determining a diameter reduction of the outer cylindrical housing, by which a clearance value between the outer cylindrical housing and the catalyst is set to a desired target value, as a function of the longitudinal pressing force detected by the detecting step; and

a swaging step of reducing a diameter of the outer cylindrical housing based on the diameter reduction calculated by the determining step.

Serial No. 10/593,645

2. (previously presented): The method as claimed in claim 1, wherein the outer cylindrical housing is swaged in the swaging step after the catalyst is press-fitted into the outer cylindrical housing.

3. (withdrawn): The method as claimed in claim 1, wherein the catalyst is press-fitted into the outer cylindrical housing after the outer cylindrical housing is swaged.

4. (previously presented): The method as claimed in claim 2, wherein the press-fitting of the catalyst is carried out using a funnel-shaped enlarged diameter member, and wherein the detection of the pressing force by the detecting step is carried out by detecting a pressing force upon press-fitting the catalyst into the reduced-diameter portion.

5. (previously presented): The method as claimed in claim 4, wherein the enlarged diameter member comprises an inclined portion, and the reduced-diameter portion includes a cylindrical portion having a straight inner surface which continuously extends from the inclined portion, and wherein the detection of the pressing force by the detecting step is carried out at a position just before a rear end portion of the mat enters from the inclined portion into the cylindrical portion as viewed in a press-fitting direction of the catalyst.

Serial No. 10/593,645

6. (original): The method as claimed in claim 5, wherein the cylindrical portion is formed to have a length such that at least an entire length of the catalyst is received therein.

7. (original): The method as claimed in claim 2, wherein the detection of the pressing force by the detecting step is carried out by detecting a pressing force of the catalyst after the catalyst is press-fitted into the outer cylindrical housing.

8. (withdrawn): The method as claimed in claim 2, further comprising a pre-swaging step for providing a reduced diameter portion on the outer cylindrical housing by a swaging process, in which swaging is performed with a smaller diameter reduction than the diameter reduction in the swaging step, and for providing an inclined stepped portion between this reduced diameter portion and a non-swaged portion, and wherein the detection of the pressing force by the detecting step is carried out at a position just before a rear end portion of the mat enters from the stepped portion into the reduced diameter portion as viewed in a press-fitting direction of the catalyst.

9. (withdrawn): The method as claimed in claim 2, further comprising a press-fitting step for temporarily stopping a press-fitting operation after the catalyst is entirely press-fitted inside the outer cylindrical housing, and a re-press-fitting step for

Serial No. 10/593,645

restarting the press-fitting operation temporarily stopped by the press-fitting step and re-press-fitting the catalyst, and wherein the detection of the pressing force by the detecting step is carried out in the re-press-fitting step.

10. (withdrawn): The method as claimed in claim 2, wherein the calculation of the diameter reduction by the calculating step is carried out based on data which are previously set in accordance with kinds of mats, catalysts, and outer cylindrical housings.

11. (withdrawn): The method as claimed in claim 2, wherein the calculation of the diameter reduction by the calculating step is carried out based on a peak value of the pressing force detected by the detecting step at a predetermined insertion position.

12. (withdrawn): The method as claimed in claim 2, wherein a sheet made of polypropylene or polyethylene terephthalate is attached to an outer surface of the mat.

13. (previously presented): A catalytic converter made by the method of claim 1.

Serial No. 10/593,645

14. (previously presented): The method as claimed in claim 1, further comprising:

controlling a plurality of the catalytic converters for checking on acceptance/rejection of each catalytic converter, by including in the determining step; and

pressing the catalyst in the swaged outer cylindrical housing to determine whether or not the catalyst is supported by a predetermined packing density.

15. (previously presented): The method as claimed in claim 14, wherein the determining step is carried out after the catalyst is press-fitted into the outer cylindrical housing.

16. (withdrawn): The method as claimed in claim 14, wherein the determination step is carried out after the outer cylindrical housing is swaged and in the process of press-fitting the catalyst into the outer cylindrical housing.

17. (withdrawn): The method as claimed in claim 14, wherein a sheet made of polypropylene or polyethylene terephthalate is attached to an outer surface of the mat.

Serial No. 10/593,645

18. (previously presented): The method as claimed in claim 1, wherein the longitudinal direction is substantially parallel to an axis of the outer cylindrical housing.

19. (previously presented): The method as claimed in claim 5, wherein the press-fitting direction of the catalyst is the longitudinal direction.